

# VIM IN THE VEINS—FANTASY OR FACT: THE ADULTERATION OF ILLICIT DRUGS

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The purpose of this paper is to throw some light on the adulteration and dilution of illicit drugs, heroin, cocaine, amphetamine and ecstasy in particular. The findings of the paper question common assertions that street drugs are 'dirty' drugs full of dangerous and unknown quantities such as brick-dust, Vim, Ajax (domestic cleaning agents), rat-poison and even ground glass, as well as the logic of why such practices should be thought to exist. Common adulterants and diluents (diluting agents) are outlined and discussed and an understanding of them as essentially rational and relatively safe not unpredictable and life-threatening is put forward. It is further suggested that far less adulteration than is frequently believed to take place actually does so.

*Keywords:* Adulterants; diluents; impurities; dangerous adulterants; purity; drug market effects on adulteration practices

## Note on Terminology

The term adulterant is used in this paper to refer to substances added to illicit drugs in the process of selling and distribution. Adulterants proper, are in fact other psychoactive drugs (like caffeine, or paracetamol) which are much cheaper than the main substance, have a similar or complimentary effect when mixed with it, and therefore help hide the fact that the substance has been diluted. Substances which are not psychoactive, such as glucose and lactose, are more formally known as 'diluents'. These are added to a drug to increase the amount of drug available to be sold. It should be noted however that some substances which are found in street drugs will be the result of the particular manufacturing process used to make the drug. In this sense those substances might be more properly referred to as 'impurities'. 'Excipients' found in drugs (primarily pills/tablets) are the products used to bind the drug together. Common excipients are starch, gelatin or other gums (ISDD, 1994a).

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## THE PROBLEM AS CONCEIVED

The notion that illicit street drugs, particularly heroin (and currently 'ecstasy') are full of dangerous impurities, likely to lead to serious harm or death is a common one. It is a common notion because there is hardly a source of authoritative or public information that does not subscribe to it and/or propagate it. Even within the drugs field, literature, failing to go into any great substantiating or contextual detail, provides throw away statements like, 'The adulterants that dealers use to cut heroin or cocaine may be anything from quinine to rat poison and can kill naive users who unwittingly inject contaminated substances' (Zackon, 1988: 62), or, 'street heroin may be adulterated with substances such as lactose, glucose, chalk dust, caffeine, boric acid or talcum powder and may be as little as 25% pure heroin' (NCIS, 1993: 13) or, 'but then milk powder and brick dust are not the best things to put into people's veins' (Fazey, 1991: 19). More often, even where the source may demonstrate a more considered approach, there is a tendency to attach the issue of adulteration onto other problems associated with drug purity without care to delineate levels of importance between them and their respective dangers. 'Users' ignorance about the identity, purity and potency of street drugs leads to greater and more frequent health related problems than can be attributed to the pharmacological actions and effects of the drugs themselves' (Coc *et al.*, 1987: 46). Examples of media (particularly television and film) representations of impurities being responsible for drug deaths are common<sup>1</sup> as are statements by members of the criminal justice and drug treatment systems. It is also used by many individuals in the drugs field who are supportive of substitute-prescribing approaches to treatment who often emphasise the impurity of street drugs to bolster their arguments as it is by proponents of absolute prohibition. Impure drugs are commonly conceived of as both widespread and dangerous. Little serious debate has taken place as to the nature of the dangers posed by the particular impurities considered to be the problem. This is somewhat surprising given the nature of those substances commonly perceived to be involved: Vim, Ajax,<sup>2</sup> ground light-bulb glass, brick-dust, talcum powder, rat poison (strychnine). The list is longer than that stated but the general drift I am sure is encapsulated in those shown. These are perceived as dangerous, health/life threatening substances. 'Vim in the veins' is in fact a common saying and clearly alludes to the belief that messing with street drugs means a serious gamble is being played every time they are used. It is also often believed that drugs such as Ecstasy and amphetamine are 'laced' with drugs such as heroin. The dual rationales given for this adulteration are (mimicking fears around the adulteration of heroin) that illegal drugs per se are necessarily laced with dangerous substances, and/or that pernicious dealers adulterate with substances like heroin in order to 'hook' unsuspecting users of

'soft' non-addictive drugs onto the more addictive heroin and thus secure a regular client base, or just because they are 'evil'. That adulterants represent a common and huge risk to the drug taker and that they are a particularly pernicious in nature is thus a prevalent position taken by many. Are these perceptions useful? What do we know about adulteration and drug impurities?

### **'VIM IN THE VEINS'—THE EVIDENCE**

Simply put there is very little, if indeed any, evidence to substantiate anecdotal reports of the use of domestic cleaning agents such as Vim or Ajax or the use of ground light-bulbs or brick-dust to 'cut' heroin or other street drugs with. There is certainly no official documentation of which I am aware which shows that analysis of drug samples have contained such substances. On the other hand, formal analysis, for forensic purposes does not seek to find such substances as analysis is costly and in most cases, for prosecution purposes, it is only considered necessary to identify whether a sample contains a drug which is controlled by the 1971 Misuse of Drugs Act. Although analysis of drug samples does not look for the substances listed above the data which is produced is none-the-less a useful guide to the nature and type of impurities found in street drugs. It also enables us, when combined with the deductive coupling of other evidence to suggest that substances like ground glass, brick-dust or Ajax are unlikely to be common adulterants, if indeed used at all. The existence of substances such as quinine and the infamous 'rat-poison' strychnine, *have* been shown to be a common constituent, the latter, in heroin (known as Heroin No 3) distributed from Hong Kong and other centres of production/distribution over the years (Eskes & Brown, 1975; Griffith *et al.*, 1994). As we shall see, even the discovery of rat-poison in heroin is not as disturbing as we might at first believe, nor as big a risk to health as might normally be supposed.

### **Forensic Evidence: Heroin, Cocaine, Amphetamines and Ecstasy**

Forensic analysis of drug samples over a number of decades, in different countries, locations within countries, and of different drugs does help us to understand more about adulteration patterns and about impurity/purity levels. The first point to make is that the vast majority of substances found in drugs which have been put there *after* the production of the drug i.e. with the specific desire to adulterate or dilute the drug are comparatively harmless. The second point to make is that many of the substances found are in fact added during production to manufacture a specific product and that the particular mixes involved may even change over time according to customer preference—of which more later.

## Heroin

In heroin these 'other substances' generally consist of paracetamol, caffeine, sugars and other opiate alkaloids (acetylcodeine, papaverine, noscapine), (NCIS, 1994; Kaa, 1994; ISDD, 1994a). Recently, occasionally, but not normally, diazepam, methaqualone or phenobarbital are found (Kaa, 1994; ISDD, 1994a) although these substances may have been more popular in earlier periods. Although the purity levels (and thus the percentage of a sample which is impure) vary—between 1987 and 1993 the average purity of street heroin in the UK was 38% (range 27%–48%)—the samples almost always tend to be made up of a) heroin and other opium alkaloids made when synthesising the heroin (or produced during decomposition), and b) those substances named above (NCIS, 1994). Comprehensive analysis of heroin samples by the US Drug Enforcement Agency (DEA) since 1990 reveals numerous sugars, prescription drugs (primarily paracetamol), opium alkaloids and occasionally salts but none of the 'dangerous' adulterants/diluents commonly asserted or feared (DEA, 1990; 1991; 1992; 1993; 1994). Similarly, the German Federal Criminal Police Office (Bundeskriminalamt, BKA) which undertook a twelve year 'comprehensive characterization' (p7) of heroin found Caffeine to be the most frequently detected adulterant along with phenobarbital and paracetamol (listed as acetaminophen, as in the DEA reports) and other (largely prescription) drugs. No 'unusual' substances were reported (Neumann, 1994). In the UK in 1993 paracetamol was the most common cutting agent, found in 41% of cases where any adulterant was found, and caffeine in 33% of the cases tested by The Home Office's Forensic Science Service (Drug Abuse Trends, 1993: 19). These substances are relatively benign in health terms<sup>3</sup> to the user and are there for the purpose of 'bulking' the drug out, and sometimes even to 'improve' it, sometimes both. For example, both caffeine and paracetamol, would, apart from increasing the quantity of 'heroin' through dilution, either bring about a psychoactive effect of their own (in combination with the primary drug) and/or improve the percentage uptake of the heroin (as does phenobarbital) to the user (Huizer, 1987: 209). The existence of caffeine (cut 1 to 1 with heroin) for example in heroin (base) which is to be smoked or 'chased' has been shown to enable a higher amount of the heroin (around 76%) to be *recovered* (i.e. the amount of heroin left available in the 'smoke' which is inhaled), after *volatization* (the heating, melting and then vaporization of the drug for inhalation or 'chasing') than when compared to pure heroin alone. Recovery after volatization for heroin alone was around 60% (Huizer, 1987: 209). Paracetamol is also useful for such adulteration because it has approximately the same melting point as heroin. Other adulterants also function with dual purposes. Quinine, for example, 'heightens the sensation of the *rush*' (Preble and Casey, 1969), and dilutes, and because of its bitter taste is well hidden. Customer preference also affects adulteration/dilution practices.

Strang (1990) usefully urges us 'to realise that contaminants in samples of heroin or cocaine are not all contaminants—many of them are active ingredients which may contribute to (rather than detract from) the overall effect. Thus the percentage purity of a heroin sample is not a complete indication of its perceived psychoactive effect or its appeal to the discerning heroin user. This is no doubt one of the reasons why Chinese white heroin is much revered by *afficiando* heroin addicts (as reflected by its higher market price) even though the brown heroin from South West Asia may have a higher actual heroin content. It may well be that these changes in the quality of the experience resulting from other opiate and non-opiate active 'contaminants', may well be similar to the difference between a fine claret or a malt whisky, when compared with equivalent solutions of ethanol' (p203). Thus much of the 'contaminants' are the result of the manufacture of an initial product not dilution for profit.

As with caffeine, in 'heroin No 3', Huizer (1987) also noted that *strychnine* was used to enhance the product through increasing the amount of heroin retrievable through 'chasing' (inhaling). Eskes and Brown (1975) after finding 57% (28) of 49 seizures contained a heroin, caffeine, strychnine mix concluded that the strychnine was present due to the intended manufacture of heroin prepared not for injecting but for smoking and that its presence was not related to dilution for profit (i.e. as a 'cutting' agent). In Eskes and Brown's sample the average content of strychnine was 2% of the sample with a range of 0.5 to 4.8 per cent. Although this heroin was being injected they suggested that because only around 5mg of strychnine would have been present in each injection 'The amount of strychnine in the strychnine-containing heroin samples is probably insufficient to be a threat to life' (p68). In fact the liver copes comfortably with such quantities of strychnine (Henry, 1995). Likewise, it is suspected (Clatworthy, 1995) that the paracetamol which is added to heroin is often likely to be *illicit* paracetamol and not diverted pharmaceutical supplies. This is because illicit paracetamol is suspected to be brownish in colour and would thus be less obvious in the heroin. It is also therefore likely to have been part of the production process and initial distribution process (i.e. before it reaches its country of destination) as opposed to part of the dilution process once it has hit the borders of its market destination. This is further supported by the fact that when the police raid heroin dealer's homes and other places of storage they tend not to find containers or boxes of adulterant/diluent material as might be expected (Clatworthy, 1995).

### **Cocaine Powder and Crack Cocaine**

Strangely enough, cocaine is not a drug which has overly concerned too many commentators regarding its adulteration. This may be for a number of reasons. Likely explanations would be that the dangerousness in cocaine is seen to be in

itself (its supposed ability to bring on sudden heart-attacks—even in moderate doses—although even this has been subject to telling criticism (*cf* Alexander & Wong, 1990)), the fact that too many people are known to use cocaine experimentally and recreationally without too many health related complications (WHO/UNICRI, 1995), and, especially in relation to ‘crack’ cocaine the (mistaken) belief that this is a ‘pure’ form of the drug. Cocaine powder, in the UK, is, in general, adulterated to a greater extent than heroin. Whereas the average purity of heroin in 1993 was from around 55% (at importation) to around 46% on the street, for cocaine it was 81% (at importation) and 44% on the street (NCIS, 1994). The common adulterants/diluents in cocaine are caffeine, glucose, and mannitol, with lignocaine, benzocaine, paracetamol, and lactose also found (Drug Abuse Trends, 1993). Amphetamines, are a substance that users may expect to be a common adulterant of cocaine (given the similarity of effect and of appearance, and that it is comparatively cheaper) but forensic analysis does not tend to report amphetamine as an adulterant of cocaine. In this vein, Cohen (1989) in his study of *Cocaine Use in Amsterdam* found, despite the belief of 87% (160) of his cocaine using research subjects of the common existence of amphetamine (and the perceived negative effects of it), the samples he bought from them and tested did not reveal any of the substance. Crack cocaine, indicated by Customs seizures is not commonly imported directly into the UK. It is therefore after importation that the cocaine powder is converted into crack. The purity of crack seizures in 1993 averaged around 85% (NCIS, 1994). Although not adulterated/diluted for street sales crack cocaine is essentially ‘the converted base form of salt (cocaine powder) created by using an alkali. The active part of the drug remains unchanged . . . All the properties and the impurities in cocaine will therefore remain in crack, the only difference between crack and cocaine is the delivering system’ (Bean, 1993: 3). Thus the difference in crack and cocaine is not that all the impurities are ‘burnt away’ (although some are) leaving ‘pure’ cocaine as is commonly asserted but it appears likely that crack is produced direct from imported stock. The marginal ‘increase’ in purity between imported cocaine (which is in hydrochloride form—‘salt’) and that of crack stems from the hydrochloride residue being burnt away in the conversion process (King, 1995).

### **Amphetamines**

Arguably, heroin is the drug around which fears of adulterants have surfaced most often, and from which our view of other drugs have then been partially coloured. In recent years this general fear around adulterants has been particularly acute with regard to amphetamines and other ‘dance drugs’ such as Ecstasy. At a recent conference, one Consultant Psychiatrist, generally well informed

about amphetamines and even practising (relatively radically) substitute prescribing of pharmaceutically prepared amphetamine for street amphetamine (to apparently positive effect), felt moved to exclaim in relation to the injecting of street amphetamine that '95% is not amphetamine, its something else—talcum powder or something' (Myles, 1995). Amphetamine is thus the ultimate 'dirty drug'. It has historically been a relatively impure drug but in recent years it has been even more so. In 1984 the average purity was around 20% whereas in the last few years it has settled at a low of around 5% (HOSB, 1993). But to state that 'that 95%' something else is a harmful or dangerous additive like talcum powder, is probably unhelpful. Amphetamine is implicated in relatively few deaths in the UK (and yet after cannabis it is easily the most used illicit drug (HOSB, 1993). If the problem was in the adulterants, health problems (unrelated to the primary drug) would be greater. Once again, analysis of cutting agents reveals that likely adulterants/diluents are going to be caffeine, glucose, ephedrine, paracetamol, and lactose (Drug Abuse Trends, 1993). Each either merely 'bulks' the sample or 'enhances' it. Inorganic substances reported to be found in amphetamine (of the limited analysis which has been carried out) rather than finding brick-dust or glass have only found trace elements of substances such as antimony, barium, strontium, zinc and copper (Marumo *et al.*, 1994) which would be found as trace elements in many substances, including food anyway. As we shall see later, it also appears that most amphetamine is cut once, high up the chain of distribution, and this would tend to mitigate against 'unusual' adulteration.

## Ecstasy

Stories of heroin laced Ecstasy and deaths at raves caused by unknown contaminants have recently hit the headlines. One particular story 'Bitter pills' appeared in *Time Out* a widely read weekly 'events' London guide in 1993. This story claimed that, 'Ecstasy has turned to agony for thousands of E users as dealers spike tablets and capsules with heroin, LSD, rat poison and crushed glass', and that, 'Organised crime gangs, lured by the promise of vast profits, are widely thought to be behind the trend' (Flanagan 1993: 12–13). The story is perhaps typical of adulteration scares and an example of how the media need little evidence to produce sensationalised and fear invoking material. It was a relatively easy story to write as it was able to exploit both what is commonly thought to be present in street drugs such as heroin and because ecstasy related deaths have attained a high profile in the media. Evidence in the research literature however suggests these deaths bear no relation to adulterants but to the context in which they are taken (*cf* Henry, 1992). Detection work however found the story to have 'no supporting evidence such as lab tests or reports from doctors who had treated

drug users'. Moreover the source of the story proved to be anecdotal and unreliable (Saunders, 1994) as did a similar celebrated scare in 1995 about adulterated ecstasy cited initially as the cause of death of the 18 year old Leah Betts which practically took over the popular media for 10 days at that time. As regards heroin as an adulterant in ecstasy Saunders also reports that neither the Home Office Forensic Laboratory at Aldermaston, which analyses drugs seized by the police, nor the National Poisons Unit, which receives the blood of patients believed to have taken only ecstasy, have ever found heroin (which is easily detectable) in the samples. Recent, attention has also been paid to the Dutch *Drugs Advice Bureau*, which either at its offices, or at large raves, provides an immediate analysis of bought drugs, and according to the *Independent on Sunday* (1995) has 'virtually eliminated the dangers of taking the designer drug' in Amsterdam. The unit tests for various drug mixtures, heroin included. It has never, in the thousands and thousands of ecstasy and ecstasy related pills tested, found heroin to be present in them (personal communication, November 1995). Unfortunately, this fact was not reported. Rather, the article simply stated 'Matser mixes the pill with an acid-based liquid. If it goes blue-black it is all right, made mainly of "an Ecstasy-like substance". Orange indicates the presence of amphetamine; green heroin' (Daruvalla 1995: 14). The unfortunate impression given by the text is that heroin *is* found in such pills. That users *believe* that heroin may be found in ecstasy has been confirmed recently by Forsyth (1995: 201) who found that 37 of 319 'ecstasy' samples previously taken were believed by the users to have contained heroin. As regards the *Time Out* reference to organised crime gangs the idea assumes a level of absurdity often evident in media reporting of drug stories. Why would organised crime gangs crush light-bulbs, use rat-poison or other dangerous substances? They are involved to make money not kill off customers and scare potential ones away. The media rely on the existing fears of audiences to make such claims seem credible—organised crime gangs are dangerous and fearful and as such they do dangerous and fearful things—even if there is little other logic to it.

The Home Office Forensic Science Service has found that 'The 'ecstasy' drugs (MDMA etc) are almost always encountered as tablets. The content is typically 100mg with lactose as the major excipient.' (King, 1995). Henry (1993: 2) has further stated in relation to drugs sold as ecstasy 'These may contain amphetamine sulphate, MDA, LSD, ketamine, tiletamine, dihydrocodeine, codeine and many substances which have little effect on mental function [e.g. lactose]' and that 'Although the user may not experience the desired effect, *the toxicological safety profile of these agents is likely to be higher than that of MDMA.*' In other words if there is a problem with ecstasy, it is more likely to be related to the drug itself than the adulterants.



We can see then that with heroin, cocaine, and amphetamine the common substances other than the primary drug (drug as sold) are usually intended to dilute the substance and/or do so by detracting as little as possible from the drug itself, possibly enhancing it. In relation to drugs sold as ecstasy, substitutes may be encountered but these in the main attempt to mimic the drug (e.g. LSD + amphetamine) and are comparatively no more harmful, perhaps less so. Thus the existence of other substances than the primary drug often has a distinct and purposeful rationale which goes beyond the simple desire to increase the quantity by bulking the drugs out (like adding water to whisky). It is more involved than that.

### LESS ADULTERATION THAN COMMONLY ASSUMED?

It appears that in the UK at least there is less adulteration, both in terms of the amounts of adulterants/diluents put in to many street drugs and the number of times adulteration/dilution takes place than is normally conceived. Information on purity of heroin at point of import shows that there is often less difference in the purity levels of those drugs seized by Customs (i.e. *before* they reach whatever level of distribution) and those seized at street level (drugs at the end of the distribution channel, the final product) than might be normally supposed. In 1991, 1992 and 1993 for example, purity of heroin seizures at importation were 52.5%, 59.3% and 55% (HM Customs and Excise, 1995). Corresponding average purities at street level were 45%, 46% and 39.25% respectively (NCIS, 1994). In other words average purity levels between imported seizures and street level seizures differed by only about 8–14% in these years. Lewis *et al.* (1995) also found in their study of the heroin market in London in the mid-1980s that ‘The average level of dilution evident from fieldwork data, was not as great as might have been expected’, and that ‘On average, purity on point of import into Britain is in the region of 70 per cent and retail purity in the region of 45–55 per cent’ (p175–6). In Denmark, Kaa (1994: 171) found that over a twelve year period although there was consistently a wide range of purity found in any one year ‘The average purity of wholesale samples (45%) was only slightly higher than the purity of retail samples (36%)’.

We also need to bear in mind that even where the stated purity of a heroin sample is say 50% a significant proportion of what makes up the other 50% may well be other opium alkaloids created during the synthesising of the heroin, it will not all be adulterants. Gough (1991: 527) for example reported on a 30 kg seizure divided into 30 packages which consisted of an average diamorphine (heroin) content of 76%; accompanied by acetylcodeine at 6.4%; 6-acetylmorphine at 2.1%. Other opiate alkaloids, noscapine and papaverine also accounted for 17.6%

and 6% of the samples on average. In these instances we can see that a sample where the purity of heroin is formally recorded as being say 70%, the other 30% could be almost exclusively made up by products from the production process and other opiates but that the records merely give an impression that the other 30% was 'something else'.

Even in relation to amphetamine, where purity at importation may be around 60% as it has been for the last couple of years (HM Customs and Excise, 1995), the adulteration down to the current average of around 5% at the retail (street) level is likely to be the product of a *single* ('high level' i.e. the importer) 'cut'. There is a simple reason as to why this appears to be the case. Analysis by the Metropolitan Police Forensic Science Laboratory and the Drugs Intelligence Laboratory at Aldermaston only tends to find samples seized, post-importation, which have a purity of around 5%. This is regardless of the weight of samples seized. If there was cutting all down the line of distribution (from e.g. 1kg seizures all the way down to 10g) then progressively weaker samples might be expected to be seized and a range of purities found by forensic labs (individual samples obviously show a wider range but on average the above statement holds). In other words, whatever point in the chain of distribution the seizure is made, the purity tends to always be roughly that found at the street level, indicating that once the initial dilution has been made down to around 5% that further cutting is probably negligible. A further complication to this picture emerges when we consider that amphetamine reported to be approximately 73% pure is in fact by another definition 100% amphetamine. This is because a sample containing 73% base amphetamine (isolated amphetamine is in fact liquid in form) will necessarily have been converted into a salt (the drug which appears on the street) through the use of sulphuric acid producing the commonly known amphetamine sulphate. The 'other 27%' is residual sulphate. Thus a 73% purity rating does not indicate any adulteration/dilution at all.

One final reason why less adulteration may sometimes occur relates to the fact that diluting the sample is not the only way of making it go further and enabling dealers at the lower end of the distribution chain to make a profit—the primary rationale put forward for adulteration. Simply by 'bagging' or 'wrapping' a given drug, that is, making say 28 wraps from an ounce of cocaine (there are approximately 28 grammes to an ounce<sup>4</sup>) enables a dealer to make an aggregate profit. The original ounce would cost significantly less than the cost of 28 separate gramme or half gramme deals which contain the mark-up. Supermarkets use the same method on most consumables. The profit from 'bagging' may be further enhanced by making up 'short counts' (e.g. selling just under a gramme for the price of a gramme). This is another way of realising profit without adulteration, as is the 'mark up' on initial costs (Preble and Casey 1995, Lewis *et al.*, 1985).

### **The Effect of Distribution and Production on Impurities**

In the UK in recent years, as stated above, heroin seized by customs has not differed markedly with the purity found at street level. As stated this suggests that most 'adulteration' that had taken place was carried out by higher level traffickers, not street dealers. If true it would also suggest that 'professional' as opposed to 'amateur' adulteration from higher level distributors, perhaps more concerned about the business of distribution itself tends to mitigate against ignorant and dangerous adulteration. This is a different scenario than that traditionally perceived. Different contexts clearly impact differentially on adulteration practices. Preble and Casey (1995) for example, found that in the US (1960s) the highly structured and multi-layered chain of distribution involving organised crime syndicates in the heroin market created an ongoing process of adulteration/dilution all the way down to the street. This would often involve one to one cuts of the samples passed down the chain until the resulting purity was perhaps a tenth of its original imported strength. Even here however, samples would be tested for quality throughout the chain leaving little or no room for adulteration with obviously harmful substances e.g. 'The kilo connection pays \$20,000 for the original kilogram (kilo, kee), and gives it a one and one cut (known as hitting it), that is, he makes two kilos out of one by adding the common adulterants of milk sugar, mannite [mannitol<sup>5</sup>] (a product from the ash tree used as a mild laxative) and quinine' (Preble & Casey, 1995: 21). Preble and Casey describe each level (of which there were at least six) in similar terms, significant (one and one, two and one) cuts made all the way down. In the UK such structure and adulteration is *not* evident. Patterns do exist. London tends to have the highest levels of purity for most drugs but even then the difference may only be in the region of 3 or 4% (heroin) for the South East and South West of England and only dropping significantly once the North of England is reached (Drug Abuse Trends 1993: 18). On the whole however the UK drugs markets may be said to consist of 'flexible hierarchies and dynamic disorder' (Lewis, 1994), that is, 'The British market is notably more flexible than some continental markets, which have higher barriers to entry constructed by organized crime groups that assert territorial control, exclude competitors, and demand a share of all profits' (Lewis, 1994: 46). The net result is that less adulteration takes place because there is less well defined structures through which the merchandise passes and therefore less accepted practice as to what level of purity will be received. This, in all probability, is further enhanced by the existence (in the absence of more rigid structures) of greater 'competition' between suppliers and thus helps mitigate against too much adulteration/dilution as good purity in the market can help secure custom.

## BELIEF IN HARMFUL ADULTERATION—LOGICAL PROBLEMS

Apart from the forensic evidence outlined above there are a number of reasons why we might doubt the basis of most fears about adulterated drugs and the particular form (brick-dust; Vim etc) they take. Primarily, the activity of drug selling is just that, the selling of a product. Whether the product has to go down a pyramid or not, the seller for the most part, does not want ill health or death to befall their clients.<sup>6</sup> If they are regularly involved in the trade of drugs then they have no motive to use substances other than those outlined previously such as caffeine, glucose, lactose, and other useful pharmaceutical compounds. As stated above there may be a direct 'benefit' to the distributor in using these substances. Often they may 'enhance' a product by mimicking and even extending the effects of the primary drug (e.g. amphetamine in cocaine<sup>7</sup>), by increasing the amount of drug available to the user (e.g. caffeine, paracetamol in heroin), or simply by improving (subjectively so), through drug combination, the effects of the drug taking experience (Strang, 1990). Another logistical problem relates to the fact that most of the adulterants/diluents used are both readily available and even cheap. The financial incentive, even for the mythical<sup>8</sup> desperate junkie prepared to do anything to get their next hit, is negligible. In any case, resorting to the grinding down of a light-bulb or a brick does not strike me as very likely, it is just as easy to grab a bottle of paracetamol, or even glucose, out of the cupboard. Following this logic we would have to ask *when* would *obviously* dangerous substances, likely to cause real harm be used. Arguably, such action may occur. But, statistics on drug fatalities, especially around drugs like amphetamine (95% impure) are very low (less than 10 a year (HOSB 1993) given the very high levels of use in the UK. Clearly such adulteration is not normal or even commonplace, or if it does take place not highly dangerous. For someone to knowingly mix a dangerous substance in a drug sample with the express intention to sell it on knowing it would cause harm is likely to happen for one of two reasons, both of which, I would argue represent a qualitatively different activity to what we would normally understand as drug adulteration/dilution. The first scenario is that the person cutting the drugs is psychopathic. This could also be the case of your local baker, brewer or fishmonger. It would be a chance relationship which produced a psychotic drug dealer who was at one and the same time willing to undermine his/her income by killing off their clients (and putting off future ones). He/she would have to be stupid as well as mad. The second scenario has more logic to it but is perhaps more reliant on particular structural situations to be more likely—revenge. It is not uncommon to hear anecdotes relating to revenge or grudge killings within the drugs underworld through the adulteration of drugs with poisons. The reporting of drug related deaths in the UK where poisons have been

recorded in addition to the primary drug are however virtually non-existent. One recorded example of strychnine poisoning in Dublin in the early 1980s cites how 'Eight young adults sniffed quantities of strychnine in the mistaken belief that it was cocaine .. [and that] It is not known how these patients acquired the strychnine, which was apparently inhaled by mistake for cocaine at a party' (O'Callaghan *et al.*, 1982: 478). A fatal (uninformed) mistake (one of the eight died) is as likely a cause here as is the supposition of attempted murder. There may be a number of reasons why we might suppose this. Often, drug related killings are intended to be much more visible. Those doing the killing will want to use the visibility of the killing as a symbolic warning to others. Also, the adulteration of drugs even with poisons such as strychnine is an extremely imprecise and sloppy method through which to cause harm or commit murder. Only one of the eight died, seven survived. The one who died may not have been a target at all. A drug user may share their drugs or even sell them on. They may also discover the adulteration, become aware of who is attempting to cause them harm and as a consequence perhaps effectively endanger the person who originally tried to hurt them. If such a method is used to deal with unwanted members of the drug world then it is perhaps more likely to happen in the organised crime infiltrated structures of drug distribution in the US but my suspicion is that it is in fact another part of drug mythology. Overall, the point to be made, whether or not this does or does not happen, is that it is a *very* rare event. It is not the result of normal drug adulteration/dilution practices and is unlikely to touch users on the street as such poisoning would be a targeted event. It is qualitatively distinct from an understanding of adulteration practices where the danger is thought to come from day to day methods of distribution because it needs to be understood as a direct attempt to do harm to specific individuals. If a car is used to murder somebody it would hardly be reasonable to understand the incident as an accident or even within the normal understanding of what dangers cars on the roads constitute to pedestrians.

Another, but perhaps even more unlikely scenario is where extreme ignorance on the part of the person cutting the drugs led to them using dangerous adulterants. There was a case in the last century in Bradford for example where the intended diluent of plaster of paris in peppermint lozenges was accidentally substituted with arsenic by a new apprentice and resulted in 30 deaths (Postgate, 1990). In a more contemporary vein it is possible that an occasional, ignorant, street level dealer may use talcum powder as a diluent instead of paracetamol, glucose or some other commonly used substance. This would possibly explain the rare occurrence of pulmonary granulomas in the lungs of drug users, consistent with exposure to starch or talc) who inhale their drugs (c.f. Johnson & Petru, 1991; Marschke *et al.*, 1975). It is likely however that unless a susceptibility exists occasional exposure to talc

would not result in such problems. The fact that such cases are not widespread would suggest that talc is *not* a common constituent in illicit drugs.

The point to be made is that none of the above scenarios happen often enough nor constitute a practice to usefully contribute an understanding of normal adulteration practices, adulterants or the dangers in them.

### **Problems with Purity not Adulterants**

Another reason why drugs are commonly believed to be riddled with dangerous adulterants/diluents relates to occasional spates of sudden deaths (usually heroin) that become well publicised in the news media. It seems however that such deaths are primarily the result, not of adulterants, but of the occasional availability of heroin of very high purity. In recent years 'unusually strong heroin' has been associated with deaths from London, Bristol, Glasgow and Brighton (ISDD, 1994b: 19). Analysis of the suspect heroin in Brighton revealed that they 'contained eight to fifteen times this [the usual for that area] quantity—more than enough to cause the deaths', and that 'The problems had no connection with adulterants—they were entirely due to a simple and highly unusual case of heroin being sold much too strong and much too cheap' (Brind *et al.*, 1993: 12). This type of problem has led for calls by some for the introduction of street drug analysis services and to proposals on how the findings could be usefully disseminated amongst local drug using populations (Hughes, 1994; Brind *et al.*, 1993). Occasionally, the suspicion that problematic *impurities* have caused death and/or serious life-threatening outcomes in certain users can be found in the medical literature. Wolters *et al.* (1982) for example reported 47 cases of spongiform leuco-encephalopathy (a brain degenerative disease) amongst heroin users who inhaled heroin vapours. 11 of the 47 died. It involved only this group in the Amsterdam area and is an isolated occurrence of this type. The conclusion of the study was that an unknown impurity (which proved untraceable to extensive analysis of numerous heroin samples) was the cause of the reaction. This impurity however is unlikely to be an adulterant or diluent as no unusual substance likely to cause such a reaction were found. Any adulterant/diluent, properly classified, is not an impurity as such and would in all likelihood be found by forensic analysis. Such impurities may be the result of problems when synthesising or manufacturing the product which are then only exposed in the heating of the vapours.

### **Need for Further Research**

There is clearly a need for further research on what substances actually make up street drugs. We need to know conclusively what substances, organic and inorganic, people are administering. Such information could provide the opportunity

to assess more credibly the effects of drug use, of potential health problems and alert us of the dangers of particular products if necessary. It could also potentially provide the basis, in a way similar to how the Drug Advice Bureau works in Amsterdam, to let drug users (and dealers) know if their drugs are safe and/or too pure. A further possibility would be to disseminate information which warned about adulterating or diluting different drugs with various substances and was able to inform of preferable alternatives liable to do less harm. Thus, we might imagine a harm-reduction scenario whereby 'users' bring their samples to be tested (we know from the Amsterdam experience that drug distributors posing as users also take advantage of this service) and as a matter of standard practice are given general information about drugs as well as advice/information on adulterants/diluents.

### **Designer Drugs**

There have been some problems with so-called designer drugs in the US which have caused serious injury and death. Rather than being strictly related to adulterants, problems which emanate from designer drugs are the result of attempts to synthesise new psychoactive substances and the resulting compounds. One particular case in California in 1982 involving a 'synthetic heroin' containing the compound MPTP induced a disease analogous to Parkinson's disease in a number of those exposed to it and in seven cases it became severe and irreversible. Most of the 400 considered to have been exposed however were asymptomatic (Schneider & Gupta, 1993; Rutenber, 1991). The existence of designer drugs of this sort demonstrates the truism of the illicit market that you really do not know what it is that you are getting when you buy it. However, rogue drugs, likely to cause harm, for the purposes of this paper should not be confused with problems resulting from adulteration/dilution.

### **CONCLUDING REMARKS**

The evidence presented above suggests that the picture of adulteration/dilution of illicit drugs in the UK does not match that which is commonly presented and even propagated by many, even those in the drugs field itself. Apart from the fact that there actually appears to be less adulteration/dilution than is often assumed we might remember that some of the common adulterants/diluents (e.g. caffeine, glucose, paracetamol) are even used in legal pharmaceuticals as a primary drug or to enhance the action of a primary drug and even to provide a 'lift' to the consumer. Talc is still commonly used in aspirin. Most of the other substances commonly

used appear to cause little obvious harm (excepting that there are attendant dangers to all drug use) and even where a particularly toxic substance does appear (such as strychnine) it is in a quantity which the body can deal with quite effectively and exists as a strategic 'enhancement' to the product not because dealers are evil. Substances such as ground glass, brick dust, Vim and Ajax appear to be more a part of drug mythology than a part of drug adulteration/dilution practices and it is therefore important to recognise this situation and not exaggerate it as it serves to divert attention away from more meaningful understanding of drug related problems. Moreover, by continuing to propagate the lethal adulterants myth, the media and others who do so with impunity, as well as misdirecting useful health education activities, attribute a character to the dealer which demonises them further than might otherwise be the case (quote from the mirror) perhaps impacting unfavourably (and thus unreasonably?) on sentencing policy.

### ***Acknowledgments***

I would like to thank Andrew Clatworthy, Les King, Roger Lewis, Nigel South and Bill Wilson for their criticisms and constructive comments made during the preparation of this paper and on an earlier draft. I would also like to thank Les King (Forensic Science Service), Les Fiander (NCIS), John Henry (National Poisons Unit), Terry Gough (Laboratory of the Government Chemist) and John Keep (Customs and Excise) for helping me collate and/or make sense of various bits of information during the period of this research.

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### Notes

1. A recent episode of *The Bill* on Carlton television within seconds of a heroin addict dying in the programme had a police officer state 'It was smack. It looks like the heroin was cut with something and that's what killed him' (*The Bill*, September 28, 1995)
2. Vim and Ajax are the trade names of domestic cleaning agents. Traditionally, as today, they appeared in the form of a white scouring powder (although there are now a number of liquid scourers which are generic to the originals to be found under the same trade name). Constituents of Vim are as follows: approximately 95% plus, is made up of a non-soluble chalk, calcium magnesium carbonate. 1–5% (but closer to 1%) is a detergent powder chlorine release agent which accounts for approximately .3% bleach (Lever Industrials Ltd, 1996). The non-solubility of the chalk alone would not make it a good candidate for adulteration/dilution as it would be immediately obvious to a user that they had been sold poor quality goods.
3. Obviously, paracetamol is not a harmless substance per se but given the amounts found in heroin and the corresponding dose this would deliver, it is relatively benign when the risks it presents in this way are considered.
4. The exact weight of an ounce to a gramme varies marginally in practice. As the actual weight is 28.35 grammes (Avoisdupois weight) some 'round-up', some down.
5. Mannite is commonly known as mannitol (an alcohol-sugar of little health risk) in the UK.
6. This is, in a sense, largely a logistical position (apart from the forensic evidence which so far has failed to show the existence of the type of adulterant/diluents commonly feared). Statements of commercial intent and quality assurance are obviously less explicit and liable to less formal sanction in the black market of drugs. 'Proof' of the absence of malevolent behaviour is difficult to obtain. Ongoing research by the author whereby drug dealers have been interviewed about their adulteration/dilution practices however is showing that dealers actively avoid using dangerous adulterants/diluents not just for commercial but also for humane reasons. One dealer, not untypical of the responses, for example, stated when asked as to why they had not used certain adulterants/diluents 'Didn't want to harm anybody', another that it is 'too dangerous' and yet another that it was 'not good business practice'. Others demonstrated their less than malicious approach by using vitamin C and even a homeopathic nasal remedy.
7. Although research has suggested that amphetamine is not commonly used as an adulterant/diluent in cocaine (Cohen, 1989; Drug Abuse Trends, 1993) interviews by the author have revealed that at least one London based cocaine dealer regularly adulterates cocaine with amphetamine. Thus, whilst this practice is believed to be widespread (*cf* Cohen 1989) by users of cocaine there is insufficient evidence to suggest that it is more than an isolated practice, perhaps one that occasional user/dealers on the 'fringe' employ, for being essentially users, they like many other users, believe it commonplace and thus suitable?
8. One cocaine dealer recently interviewed by the author felt that it was only heroin 'junkies' who got desperate enough to use Vim or such substances. The scenario he gave as likely however demonstrated a lack of knowledge of both heroin users and its use. What his strongly held opinion more readily indicated was that dealers of certain drugs like cocaine may see themselves as dealing with a relatively 'clean' and non-problematic drug whilst retaining typical prejudices and stereotypes of heroin and heroin addicts.